THE AGRICULTURAL SITUATION

MAY 1944

A Brief Summary of Economic Conditions

Issued Monthly by the Bureau of Agricultural Economics, United States Department of Agriculture

Subscription price, 50 cents per year; single copy, 5 cents; foreign price, 70 cents; payable in cash or money order to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

VOLUME 28 - NUMBER 5 - WASHINGTON, D. C.

IN THIS ISSUE

APRIL'S COLD, WET WEATHER delayed spring crop preparations 2 to 4 weeks in most central and eastern States. Some midwest oat land is being diverted to corn or soybeans because oat planting was so far behind. Cotton planting has been delayed throughout much of the Cotton Belt, while southeastern truck crop growth is retarded and yields of some crops reduced, even though record tonnages are still indicated. * * * Federally inspected hog slaughter of 22.4 million head during the first quarter of 1944 was 53 percent greater than in the same months of 1943, while federally inspected cattle and calf slaughter was up about 15 percent over the first quarter of last year. * * * Commercially hatched chick output from January through May was expected to be about 18 percent less than the record a year earlier. * * * Despite less output per cow, increasing milk cow numbers, incentive payments and favorable pasture conditions are all expected to bring 1944 milk production up to the 1943 output, 118 billion pounds. * * * Winter wheat improved in April and output was forecast on May 1 at 662 million bushels—up 132 million from 1943.

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Commodity Reviews

DEMAND AND PRICE

DEMAND for farm products continues at the high level achieved late last year, consumer incomes being more than sufficient to purchase all of the farm products available or likely to become available to civilians during 1944 at current stabilized prices. Salary and wage payments during February were 15 percent above those in February last year. Except for amounts demanded by higher taxes, increases in consumer incomes are available for purchasing larger volumes of goods and services, including farm products.

Retail prices generally are about 35 percent above their 1935–39 level. The dollar volume of sales of durable goods has been about maintained at the 1935–39 level, while that of nondurable goods has about doubled.

The index of the cost of living in large cities in the United States was 123.8 in March, the lowest figure since August 1943, when the index was 123.4. Recent declines in living costs resulted from declining food costs. The index of food costs was 2.9 points lower in March 1944 than in August 1943; nonfood costs were 2.7 points higher in March than the preceding August. The largest food cost decreases have been in eggs, fruits and vegetables, but the declines have been partly seasonal.

LIVESTOCK

MEAT production through September is likely to continue at a heavier rate than last year, although supplies decreased seasonally this spring and will probably continue to do so this summer. It is likely that a decline in pork production will result in a smaller total meat production during the last quarter of the year than in the corresponding period in 1943. Hog slaughter late in the year will consist largely of hogs from the spring pig crop, indicated to be smaller than the record 1943 spring pig crop of 74 million head.

The support price for Good and Choice 200- to 270-pound barrows and gilts is on a basis of $13.75 at Chicago through September 1944, and for Good and Choice 200- to 240-pound barrow and gilts $12.50 from October 1, 1944, to April 1, 1945. Anticipation of smaller slaughter supplies of hogs in the last quarter of the year (compared with a year earlier) makes it probable that hog prices will remain above the reduced support price level during this period.

Hog slaughter in federally inspected plants during the first quarter of 1944 totaled 22.4 million head, 53 percent higher than in the same period last year after allowing for war-duration plants. Through September, the slaughter of hogs each month will probably exceed last year's figure.

The number of cattle on feed in the 11 Corn Belt States on April 1 was 23 percent, or between 300,000 and 400,000 head, lower than a year ago. Decreases occurred in all States except Wisconsin, with the largest relative decrease in Minnesota.

Cattle and calf slaughter of all types in the January–March period this year was about 15 percent larger than a year ago. Relatively heavy marketings are expected to continue through the summer. From October through December, when receipts of grass-fat range cattle are largest, slaughter will be increased.

While there has been little change in prices for choice and prime, and good steers since June 1943, prices for low-grade steers and cows have risen since the first of this year, and indications are that they will not show a decline until grass-fat cattle marketings begin late in the summer.

A 6-percent decrease in the early spring lamb crop is expected to result in fewer lambs for slaughter this year than in 1943 Fewer breeding ewes on farms may in turn bring about a smaller total lamb crop Ewe slaughter is expected to be at a relatively heavy rate in 1944.

DAIRY PRODUCTS

MILK COW numbers, which were 2 percent larger on January 1 than a year earlier, probably will continue their upward trend during the year, a result of the large number of heifers kept for milk cows and the relatively high price of cows for milk compared with their slaughter price. Milk production in 1944 may be 2 billion pounds more than the 116 billion pounds anticipated earlier, or about the same as the 118 billion pounds produced in 1943.

Butter and cheese supplies for civilian consumption are larger for the current quarter than in January-March, even though the setting aside of butter was resumed in April by the War Food Administration. However, the 1944 program began with 10 percent of production required to be set aside, compared with 30 percent in April 1943.

Creamery butter production during the first quarter of 1944 was 333 million pounds, 13 percent less than a year earlier, while total cheese production of 202 million pounds was up 1 percent.

Milk production during the first third of 1944 was 37.2 billion pounds of milk, 0.3 percent above the same period a year ago. Milk production on farms in 1943, second highest in the Nation's history, was approximately one percent lower than in 1942. Farmers sold milk, cream, and farm-churned butter in an amount representing 97½ billion pounds of milk, or about five-sixths of the milk produced. A record amount of whole milk was sold to plants and dealers, but quantities of cream, retail milk, and farm butter sold by producers were less than during 1942.

Farm prices on April 15, milk equivalent basis, were higher than a year earlier. Also, dairy production payments increased returns by another 55 cents per 100 pounds over 1943 for whole milk sales and 8 cents per pound for sales of butterfat. The advance in the cost of grain and other concentrates fed to milk cows in areas selling whole milk amounted to 20 percent from April 15, 1943 to April 15, 1944. The ratio of whole milk prices to feed prices, including production payments, was 1.37 in mid-April as compared with 1.34 a year earlier.

POULTRY AND EGGS

THE EARLY spring rate of culling laying flocks was comparatively low for the season. Chick demand decreased considerably with the decline in egg prices, indicating the likelihood that chick purchases would fall into line with early February intentions to purchase 17 percent fewer chicks this year than last. Beginning not later than next fall, the number of layers probably will be smaller than a year earlier.

The announced support price for the spring and early summer is a United States average price of 30 cents a dozen to farmers. To implement this, support prices have been announced in terms of specific grades and sizes at designated points throughout the Nation. There is likely to be a considerably higher increase in egg prices from spring to fall this year than last, while the total egg production decreases seasonally from early May to November.

Farmers grossed a record 2⅔ billion dollars in 1943 from chickens and eggs, including commercial broilers. Around

Index Numbers of Prices Received and Paid by Farmers

[1910–14=100]

Year and month	Prices received	Prices paid, interest and taxes	Parity ratio [1]
1943			
January	181	157	115
February	184	159	116
March	192	160	120
April	197	162	122
May	194	163	119
June	195	164	119
July	193	165	117
August	192	165	116
September	193	165	117
October	194	166	117
November	194	167	116
December	196	169	116
1944			
January	196	169	116
February	195	170	115
March	196	[2]170	115
April	196	170	115

[1] Ratio of prices received to prices paid, interest, and taxes.
[2] Revised.

85 percent of this was marketed, and 15 percent consumed at home. Gross income from chickens and broilers was around 1 billion dollars; from eggs, 1⅔ billion. Production estimates for 1943: 847 million farm chickens, 252 million commercial broilers, and 54 billion eggs.

Compared with 1942, gross income from chickens, broilers and eggs was up nearly one-half. Chicken production was up one-fifth; broiler production increased nearly a fourth, and egg production was nearly 12 percent higher. Feed and other costs were also higher than in 1942.

Although in 1943 farmers sold 41 percent more chickens and 15 percent more eggs than in 1942, they ate 1 percent fewer chickens and slightly fewer eggs in their own homes.

A substantial decline in chick hatchings is in prospect for the remainder of the hatching season, with many hatcheries scheduled to close May 15 if reported intentions are carried out. The output of chicks during April and May was indicated to be only about two-thirds of the output during the corresponding period last year. If this decrease occurs, chick production during the first 5 months of 1944 would be 18 percent less than the record high total of 1,069,773,000 achieved in the same period last year, but 10 percent more than the corresponding period in 1941.

TRUCK CROPS

SPRING truck crop tonnage this year will probably establish a new high record, despite the fact that unfavorable weather the first half of April reduced early prospects to some extent. On the basis of estimates made to May 1, covering all of the spring acreage an aggregate production of about 1,686,000 tons of spring truck crops will be produced. This would be 15 percent above 1943 spring production, 12 percent above the 1933–42 average, and 8 percent above the previous record set in the spring of 1938. Production of spring season truck crops in 1943 totaled 1,466,000 tons, and averaged 1,509,000 tons during the period 1933–42.

Compared with last spring, substantially larger supplies were indicated for spring eggplant, early spring onions, early spring tomatoes, spring green peppers, early spring lettuce, spring celery, and early spring cabbage. Moderate increases over last year were expected in spring shallots, spring cauliflower, early spring snap beans and spring spinach. Lighter supplies of early spring green peas, mid-spring snap beans and spring carrots were indicated, with the reduction in carrots being especially pronounced. Spring carrot production, however, is well above average.

Early estimates on the intended acreage of cabbage, onions, and watermelons for summer and fall harvest indicate substantial increases in the acreage of each of these crops. The indicated increase over last year for summer cabbage is 2 percent; for sum-

mer onions, 33 percent; for summer watermelons, 50 percent; for early fall Domestic type cabbage, 20 percent; and for early fall Danish (storage) type cabbage, 30 percent.

FRUIT

PROSPECTS for deciduous fruit and nut production in 1944 were generally favorable on May 1 in nearly all sections of the country. It was too early, however, for definite indications as to prospective production. Trees, vines, and buds in nearly all sections came through the winter in good condition. Peach production prospects in the Southeastern and South Central States were reduced materially by low temperatures early in April; nevertheless, for these areas as a whole an approximate average crop may still be expected.

Citrus groves were in good condition in all areas on May 1 and prospects for the new citrus crops were good. The 1943–44 citrus production is turning out to be the largest on record. Orange production, including tangerines, is expected to total about 104 million boxes, and grapefruit about 53.1 million boxes, both record crops. Lemon production is indicated to be 12.8 million boxes compared with the crop of 14.9 million boxes last season.

Indications are that production of early- and mid-spring strawberries totaled 5,441,000 crates, approximately 23 percent less than in 1943 and about one-half the 10-year (1933–42) average. With a considerable reduction in acreage this year, higher yields per acre are in prospect than for 1943, due to favorable growing conditions. The estimated acreage of late spring strawberries is 14 percent below the 35,750 acres harvested last year.

Prices for most fresh fruits marketed during the spring were higher than similar prices a year earlier. The

Prices of Farm Products

[Estimates of average prices received by farmers at local farm markets based on reports to the Bureau of agricultural Economics. Average of reports covering the United States weighted according to relative importance of district and State]

	5-year average		April 1943	March 1944	April 1944	Parity price, April 1944
	August 1909–July 1914	January 1935–December 1939				
Wheat (bushels)—dollars	0.884	0.837	1.223	[1] 1.46	1.47	1.50
Corn (bushel)—do	.642	.691	1.002	1.14	1.15	1.09
Oats (bushel)—do	.399	.340	.611	.793	.794	.678
Rice (bushel)—do	.813	.742	[1] 1.847	1.92	1.90	1.38
Cotton (pound)—cents	12.4	10.29	20.13	19.97	20.24	21.08
Potatoes (bushel)—dollars	.697	.717	[1] 1.671	1.37	1.37	1.22
Hay (ton)—do	11.87	8.87	12.61	16.00	16.20	20.20
Soybeans (bushel)—do	[2] .96	.954	1.67	1.89	1.91	[3] 1.63
Peanuts (pound)—cents	4.8	3.55	6.98	7.52	7.63	8.16
Apples (bushel)—dollars	.96	.90	2.15	3.07	3.17	1.63
Oranges, on tree, per box—do	[4] 1.81	1.11	2.03	1.95	2.20	[3] 1.97
Hogs (hundredweight)—do	7.27	8.38	14.34	13.10	13.00	12.40
Beef cattle (hundredweight)—do	5.42	6.56	[1] 13.00	12.00	12.10	9.21
Veal calves (hundredweight)—do	6.75	7.80	[1] 14.22	13.30	13.20	11.50
Lambs (hundredweight)—do	5.88	7.79	[1] 13.87	13.40	13.60	10.00
Butterfat (pound) [5]—cents	26.3	29.1	51.3	51.1	50.7	[6] 44.3
Milk, wholesale (100 pounds) [4]—dollars	1.60	1.81	[1] 3.05	3.27	[7] 3.21	[6] 2.55
Chickens (pound)—cents	11.4	14.9	24.6	23.8	23.7	19.4
Eggs (dozen)—do	21.5	21.7	33.7	30.1	27.1	[6] 30.0
Wool (pound)—do	18.3	23.8	[1] 42.1	39.0	39.7	31.1
Tobacco:						
Fire-cured types 21–24 (pound)—do	[8] 13.6	----------	14.9	21.0	20.7	14.8

[1] Revised.
[2] Comparable base price, August 1909–July 1914.
[3] Comparable price computed under sec. 3 (b) Price Control Act.
[4] Comparable base price, August 1919–July 1929.
[5] Does not include dairy feed payments since February 1944.
[6] Adjusted for seasonality.
[7] Preliminary.
[8] Base price crop years 1919–28.

strong market position of fresh fruit is expected to continue, with prices for individual fruits at or near ceilings where maximum price regulations are in force.

TOBACCO

THE LARGEST tobacco acreage since 1939, and one of the largest on record, is expected this season. Growers' March 1 intentions were to plant 1,715,600 acres. If planted, this acreage will be exceeded only by the 1,999,900 acres in 1939. If the announced plantings materialize, and the 5-year (1938–42) average yield by States and types, are raised, 1944 production will be 18 percent higher than the 1942 crop.

Growers plan to increase flue-cured acreage 18 percent, from 846,400 acres in 1943 to 996,300 in 1944. If the production rate should match the 1938–42 yield, this acreage will produce 946 million pounds of tobacco, a crop 20 percent larger than last year's, and second only to the 1939 record crop.

March intentions for burley tobacco point to an acreage 21 percent higher than last year's harvested acreage, or 478,000 acres. On the basis of the 5-year (1938–42) average yield, this would produce a 456-million-pound crop, 18 percent more than last year's crop, and approximately 7 percent above the previous record crop of 424.7 million pounds raised in 1931. Indications were that Maryland tobacco plantings would be 15 percent higher than last year's, and that there would be an increase of 4 percent in dark-fired and 32 percent in dark air-cured. In the case of cigar tobaccos, increases of 12 percent for wrappers and 8 percent for binders appeared likely, with a probable decrease of 3 percent for filler types.

Domestic cigarette consumption of 257 billion during the 1943 calendar year was an all-time record. During the first 7 months of the current fiscal year, approximately 159.8 billion tax-paid cigarettes were withdrawn, as compared with 147.2 billion withdrawn during the same period a year earlier.

Last year's cigar consumption was below 1942, with tax-paid withdrawals of all classes during the calendar year 1943 totaling 5.2 billion, 16 percent less than the 6.2 billion withdrawn during 1942.

Prices received by growers for all major types of the 1943 crop of tobacco were well above those paid for the 1942 crop. Higher prices were particularly pronounced for dark tobaccos, although substantial advances occurred for burley and for some types of flue-cured and cigar tobaccos. For the 1943 crop of flue-cured, estimated at about 791 million pounds, an average of almost 40 cents per pound was paid, the highest price since 1919, when growers received 44.4 cents per pound.

Gross marketings for the 1943 crop of burley totaled 395.4 million pounds at an average of 45.5 cents per pound—the highest average price on record.

COTTON

COTTON consumption during the first 8 months of the current season was at an annual rate of 10.1 million bales. This compares with an annual rate of 11.3 million bales during the corresponding months last season and a total consumption in 1942–43 of 11.1 million bales.

This decline in cotton consumption was influenced by the tight labor situation rather than by any decline in demand for cotton textiles. The labor difficulty is caused by (1) high turnover rate among textile workers, (2) decrease in worker efficiency because of the necessity for hiring a greater number of inexperienced workers, and (3) fewer employees in the industry (a decline of 10 percent in little more than a year).

Recent Government actions designed to increase mill consumption include: (1) recent increases in ceiling prices for certain classes of cotton

textiles, (2) the amendment to Limitation Order L–99 to provide for production of cotton yarn at least up to the maximum 1943 quarterly level, and (3) the War Manpower Commission order stipulating a 48-hour week in the cotton textile industry.

Cotton prices during the first quarter of 1944 ranged from 19.83 to 21.28 cents for Middling $^{15}/_{16}$ inch, as compared with the average of 20.77 during the corresponding period last season. For some months cotton prices have reacted to peace rumors by weakening, and have strengthened on news of a long war. However, in addition to war developments, crop prospects are also an important force at this time of the year, and it remains to be seen what the effect will be of widespread delay in plantings due to heavy rains, as well as labor scarcity and increased wage rates.

CORN STOCKS

MANY processors manufacturing corn products for use by essential war industries had, by the middle of April, been unable to obtain enough corn to process from commercial stocks. During April the wet-processing plants were operating on limited schedules even though they use a comparatively small amount of corn, about 2½ million bushels a week, at peak production—to come from last year's record crop of over 3 billion bushels.

To help the corn processors, the War Food Administration, through the Commodity Credit Corporation, recently began buying corn from farmers in five corn-belt States. CCC purchases shelled corn delivered to local elevators and pays the farmers the cost of shelling and hauling. By the end of April more than 20 million bushels were promised for sale by farmers under the CCC purchase program.

This program became necessary because local elevators did not have sufficient supplies to meet war needs even though WFA had required them on April 1 to increase from 35 to 60 percent the amount set aside for sale to designated processors.

In addition to its uses as livestock feed and human food, corn is processed for use in the making of many vital war products such as explosives, textiles, pharmaceuticals, rubber, asbestos, copper, aluminum, bronze, magnesium, and steel.

COLD STORAGE

COLD STORAGE space, particularly in freezers, was severely strained during the past winter and early spring, largely a result of last year's phenomenal production of so many commodities requiring freezing. On April 1 this year freezers were 87 percent occupied as compared with 58 percent on April 1, 1940, and coolers were 79 percent occupied on that date compared with 38 percent April 1, 1940.

Despite heavy out-of-storage movements of frozen fruits and vegetables, creamery butter, frozen poultry, and frozen meats toward the end of the first quarter of 1944, stocks of these items on April 1 were still considerably greater than a year earlier.

On April 1 frozen fruit holdings were 30 percent more than a year earlier, frozen vegetables 84 percent more, frozen eggs 50 percent more, frozen poultry nearly 100 percent more, and creamery butter nearly 5 times more. The out-of-storage movement of frozen meats was not as great as normal, and the accumulation of lard stocks was substantially larger than normal.

Generally, cold storage stocks are nearly depleted before new production goes into storage. However, larger production, plus the fact that large commercial producers and users of food have tended to store supplies in excess of normal requirements, has resulted in crowding refrigeration facilities to the point where commodities had to be moved out quickly to make

room for incoming 1944 production—principally dairy and poultry products.

Acting toward this end, the War Food Administration has ordered prompt movement of certain foods from cold storage.

FARM LABOR

THE general level of farm wage rates was at a record high in April, 17 points higher than on January 1 this year and 53 points higher than on the first of April a year ago. The index was 292 percent of the 1910–14 average compared with an index of 239 on April 1 last year.

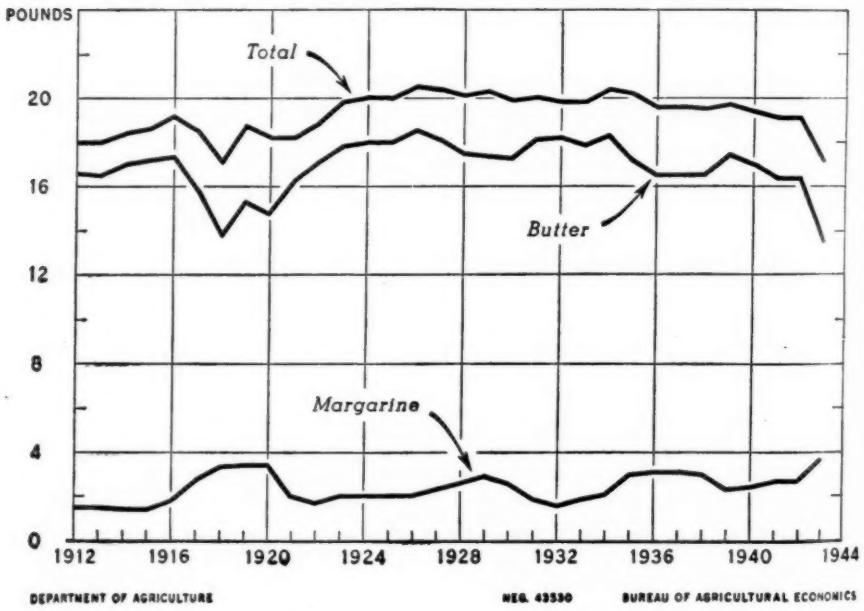
Sharp increases in farm wage rates over April 1943 were reported in all parts of the country. The increase in average rates per month with board varied from 16 percent in the East North Central Region to 26 percent in the West South Central States. New England, with a 13 percent increase over April 1943, saw the smallest gain in daily rates without board, while the West South Central Region had the largest, 28 percent.

While the April 1 number of unpaid family workers—7,401,000—was virtually the same as a year ago, the number of hired workers declined 10 percent from last year's total—1,679,000 compared with 1,875,000. The decline in the number of hired farm workers was general in all parts of the country except the Pacific Region, where no change was noted.

Specific Wage Ceiling Regulation No. 3, announced April 19 by the War Food Administration, established maximum wage rates for workers engaged in picking early potatoes in the San Joaquin and Cuyama Valleys of California.

The piece-work rate established was 12 cents per hundred pounds, net weight, and the hourly rate, 70 cents per hour. These are approximately the peak rates for this work reached at the end of last season in these valleys.

BUTTER AND MARGARINE: APPARENT DOMESTIC DISAPPEARANCE (CIVILIAN AND MILITARY) PER CAPITA, UNITED STATES, 1912-43



Poultry Industry Changes

IMPORTANT changes in the poultry industry during the past decade—perhaps more significant than in any other livestock enterprise—have been accelerated during the war. Greatly expanded and intensified demand together with many innovations in distribution methods have stimulated these changes. Because of their high nutrient value, dried eggs account for a sizable share of the food supplied our armed forces and lend-leased to our Allies. Shortages in red meats and other competing products have resulted in a civilian poultry and egg demand far greater than would normally be the case with prevailing incomes. About 30 percent more eggs were produced in 1943 than in 1941, illustrating how readily egg production responds to changes in demand.

Probably the most important change in the poultry industry is the almost phenomenal increase in rate of lay per bird during the past decade. Improved feeding and breeding methods have been largely responsible for this.

Increased Specialization

For the most part these changes have been in the direction of increased specialization and improved techniques for each specialized function. Some of the developments have been retarded during the war but many have been accelerated. All will continue in the years ahead.

While the rate of lay per bird has been increasing steadily for several years there is still considerable chance for further increases. Requirements of feed for maintenance of laying birds is about constant regardless of the rate of production. Hence, the amount of feed required to produce a dozen eggs decreases as the rate of production increases. A Leghorn producing 80 eggs per year requires about 10 pounds of concentrates per dozen eggs produced, while a bird that lays 160 eggs requires about 5.5 pounds per dozen.

Farmers in many parts of the nation have greatly improved their poultry husbandry practices in the last few years. Improvement has been particularly marked in the Midwest and in the South; the national average level of performance by poultrymen apparently has increased considerably more than on specialized egg-producing farms where a relatively high degree of efficiency had been achieved many years ago. Competitive relationships among egg producing regions probably will change at an accelerated rate because of variations among regions in the rate of improvements.

Less Meat Per Egg Output

The increased rate of egg production per layer, besides raising the level of efficiency of production in terms of feed concentrates used per dozen eggs produced, has resulted in relatively less chicken meat from farm laying flocks in proportion to the volume of eggs produced. The fairly general farm practice of purchasing sexed day-old pullets (instead of straight-run chicks) has contributed to the decline in chicken meat production on farms relative to egg production. For every dozen eggs produced on farms in 1939–43 there was produced 0.59 pound of chicken (dressed weight, slaughtered) compared with 0.70 pound in 1925–29 and 0.74 pound in 1910–14.

Prevailing consumer demand for poultry meat has been met, insofar as feed supplies and prices have permitted, by increased production of both commercial broilers (specialized production of chicken for meat) and turkeys. The slaughter of commercial broilers in 1943 was 700 percent greater than the slaughter 10 years earlier while the slaughter of turkey was 64 percent larger. The slaughter of farm chickens was only 38 percent greater in 1943 than in 1934, but total slaughter of chicken was 60 percent greater.

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Broiler production has increased steadily each year from 1934 through 1943—the period for which records are available In general specialized production of chicken for meat of the kind typified by commercial broilers has thus far expanded the most near large consuming centers or in sections having a relatively large amount of incompletely utilized agricultural labor.

Increased specialization within the turkey industry in the last decade has arisen following the separation of the function of producing hatching eggs from the actual raising of market turkeys. For several years the shift in farmers' practices (actual and intended) from producing their own hatching eggs to buying eggs or poults outstripped the specialized production of eggs and poults. This tended to limit any further expansion in total turkey production. These relationships promise to be better balanced in the near future.

Larger Dried Egg Production

An outstanding feature in the distribution phase of the poultry and egg industry has been the phenomenal wartime increase in dried egg production. The output of dried egg in 1943 totaled 262 million pounds in contrast to the pre-war annual average of less than 10 million pounds. Dried egg was well adapted to lend-lease purposes because little shipping space was required for the amount of food nutrients contained and because it was possible to readily increase farm production of eggs. For the military the only feasible means of shipping the nutrients from eggs to the many distant outposts was in dried form. Dried egg, properly prepared, has been a highly satisfactory substitute for fresh shell eggs for several uses.

Dried egg production, no doubt, will decline sharply after the present emergency. The most promising opportunity for expanded use of dried egg appears to lie in the manufacture of prepared flour and other mixtures and as an ingredient in the preparation of food in both homes and institutions.

Any price advantage that would have been gained several years ago by drying eggs in the flush season for sale in the fall and winter of seasonally low production has become considerably smaller because the seasonal swing from low to high production and prices has become much smaller. Corresponding with the relative increase in egg production in the fall and winter the nation has become less dependent on storage shell eggs in that season.

Future prospects for the dried egg industry differ greatly from prospects for the dried milk industry. An egg is in a "container" when produced, whereas milk requires varying degrees of processing. In the past, except for hatching eggs, practically all the eggs that have been produced have been consumed while many billions of pounds of skim milk have been used for animal feed and in many cases inefficiently for that purpose. Hence, increased production of dried egg for domestic consumption would largely mean a food shift from one form to another. Increased production of dried milk for consumption in this country, on the other hand, would mean, in large part, a net addition to the total human consumption of dairy products.

More Frozen Poultry

The quantity of poultry sold to consumers fully drawn and frozen has increased greatly in the last few years. Customarily, in the past, poultry has been referred to as dressed after only the blood and feathers have been removed. Birds dressed to this stage have been stored for long periods and transported great distances and then the birds have been fully drawn—all inedible portion removed, except bones—in the retail store or in the home of the consumer using the bird.

Improvement in quick-freezing processes has been a factor accounting

for increased processing of fully drawn and frozen birds. This will tend to increase more with any further expansion in the frozen food industry.

Along with the changes in the preparation of dressed poultry is the improved quality of birds delivered by farmers to dressing plants, a result of better feeding and management. Packers and dressers are thus finding it relatively less profitable than formerly to feed poultry in their feeding rooms.

Use of Government grading standards for eggs and poultry has increased greatly during the war emergency. This has been due in part to Federal purchases and setting price ceilings in terms of such grades. But the mere fact that many dealers and processors, for the first time, have experienced benefits derived from uniform grading standards will encourage increased use of grades in the years ahead.

Production of eggs has increased more sharply than has production of poultry meat compared with the prewar level. Total production of eggs in 1944 will be equivalent to about 440 eggs per person. If requirements for hatching and foreign trade in 1944 were equal only to that normally to be expected in a prosperous year, the per capita supply of eggs for consumption in 1944 would be about 425 eggs.

To supply the 1944 total population with the 1942–43 average per capita consumption of eggs, however, would require only between 75 and 80 percent of the prospective 1944 egg supply per citizen—military and civilian. This is indicative of the direction but, of course, only roughly indicative of the amount of adjustment that will occur in the years ahead, compared with the 1944 egg output. Further increases in the rate of egg production per bird will mean that numbers of layers will decline proportionately more than egg production. Hence a relatively much greater proportion of the total consumer demand for poultry will be met by turkeys and by chickens produced under specialized conditions.

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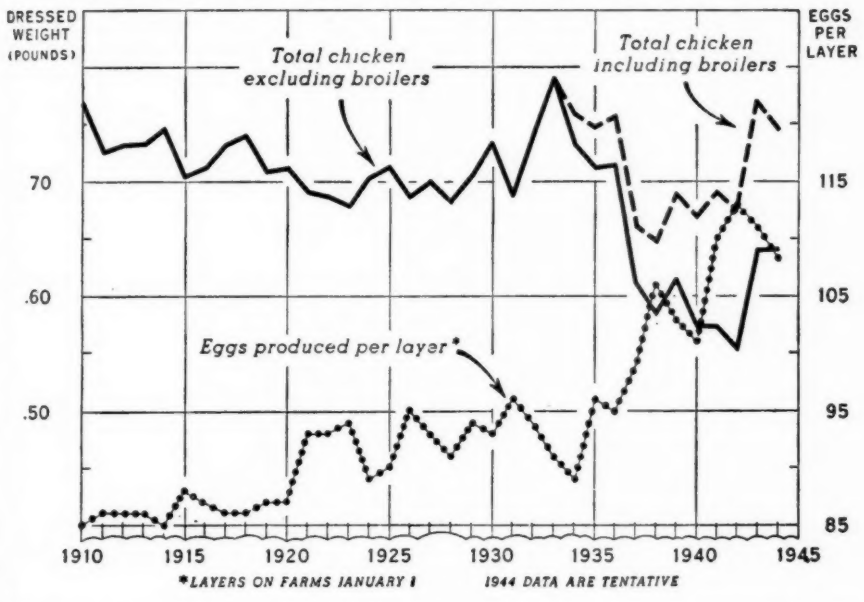
POUNDS OF CHICKEN SLAUGHTERED PER DOZEN EGGS PRODUCED, AND EGG PRODUCTION PER LAYER, UNITED STATES, 1910-44



Science Remodels Sheep

ONE kind of remodeling—the kind dealing with living animals—need not wait for priorities on building material. The material is already at hand. Skillful breeders handle it with the master touch; others obtain the desired results only with some guidance. Acting as pattern makers for improved types of animals, scientists of the Department of Agriculture have cooperated with State specialists and breeders in this field of modernization. The underlying purpose is to develop animals well adapted to the rapid pace of modern production by combining a maximum of desired characteristics.

By analyzing the breeding and production records of 1,622 ewes and their yearling daughters, scientists of the Bureau of Animal Industry in the Agricultural Research Administration estimated the extent to which fleece and body characteristics are inherited. The approximate degrees of heritability are: body weight, 40 percent; folds on the neck, 26 percent; length of staple (unstretched wool fibers), 36 percent; covering of wool on the face, 32 percent; weight of clean fleece, 38 percent; body type, 12 percent. These figures indicate that considerable progress in sheep improvement may be expected through selection for these characteristics.

Present Flocks of Mixed Breeds

Present range flocks of the West are composed principally of sheep that are intermixtures of several breeds, notably Rambouillets, Lincolns, and Cotswolds. As a result, most flocks of range sheep vary in body type and fleece characteristics which complicates both production and marketing problems.

In studies of the most desirable types of sheep for the western ranges, the animal scientists observed, among other things, great variation in the quantities of wool on the face and legs, and also in the prevalence of skin folds, especially about the neck and shoulders.

Contrary to former belief that an abundance of wool on the face and legs and a wrinkled skin all helped to make a heavier and more valuable fleece, actual tests, combined with marketing data, showed the opposite to be usually the case. Wool on the face and legs was so often short, stained, and dirty it was a liability rather than an asset.

Moreover, a heavy face covering created a so-called wool-blind condition; unless the wool was kept clipped from around the eyes, the sheep had difficulty in finding feed. Besides, wool-blind animals were more apt to be lost from the flock. Experience showed that some died from lowered resistance brought on by undernourishment and others fell victims to predatory animals. Tests also showed that, notwithstanding its larger area, a wrinkled skin produced no greater value of wool than a smooth skin. Sheep with large skin folds were also more difficult to shear than smooth-skinned animals.

Opened Faced Ewes Better

So scientists set to work to remodel, virtually from head to foot, the sheep of flocks selected for experimentation at the Western Sheep Breeding Laboratory at Dubois, Idaho. As "building" material they selected breeding animals with smooth bodies, open faces, and other desirable characteristics such as vigor and prolificacy. This work has gone on for several years. Among the results obtained, ewes with open faces have produced and raised to weaning 12 percent more lambs than ewes with covered faces. The advantage in lamb production was 8.6 pounds per ewe per year, again in favor of the open-faced ewes.

As yearlings, ewes with open faces have weighed, on an average, about 5 pounds more than those with a heavy face covering. These benefits ap-

peared to establish beyond doubt the economic evils, in sheep husbandry as elsewhere, of having wool pulled over the eyes.

Subsequent selection of breeding stock for open faces gave a greater proportion of offspring free from wool blindness. As a result of 1 year's breeding, the proportion of lambs with open faces at weaning time increased from 11 to 17 percent. Similarly the proportion of weanling lambs free from skinfolds increased from 72 to 84 percent. These findings are now being disseminated widely to range sheepmen.

Two Range Types Taylor-Made

Meanwhile, in addition to this beneficial modernizing trend, specialists of the Bureau of Animal Industry have been developing two new types of improved range sheep, almost literally built to order. One is called the Columbia, and many western sheepmen already are enthusiastic about it. It is the result of efforts to develop a crossbred sheep that will breed true to type and that is adapted to western range areas, especially where there is an abundance of feed. The foundation breeding animals were principally selected Lincoln rams and Rambouillet ewes. Columbia sheep are large, vigorous, polled (without horns), and free from wool blindness and body wrinkles. The body is especially well fleshed in the loin, has well-developed forequarters—indicating a strong constitution—and a good leg of mutton. Mature ewes produce about 12 pounds of unscoured wool a year, as compared with about 8 pounds for average sheep. The fleece of the new animal has the desirable quality of staying well together in storms. Columbia lambs grow rapidly and mature at an early age under good range conditions. Without receiving grain they average 80 pounds in weight at an age of about 130 days.

The other new range sheep is the Targhee, which derives its name from the Targhee National Forest west of Yellowstone Park. The Targhee is a medium-sized sheep produced by mating carefully selected animals of Rambouillet, Corriedale, and Lincoln breeding, with subsequent interbreeding of selected offspring. The inheritance of the Targhee is three-fourths of fine-wool sheep and one fourth of long-wool sheep. This sheep is a resourceful grazing animal, able to subsist on medium-sparse ranges. The Targhee is highly adapted to a large area of the West. Its wool is finer than that of the Columbia but not so fine as the Rambouillet's. Targhee ewes are good mothers. They raise lambs that average about 80 pounds in weight at 140 days of age, on good range without grain.

Smaller Type Designed for East

As a service to eastern sheepmen, Department scientists are developing a still smaller type of sheep designed particularly for New England farm conditions. The chief object is to combine the good meat qualities of the Southdown and the wool qualities of the Corriedale. Efficiency in the use of feed and pasture is likewise sought. This work is in progress on the Department's farm near Middlebury, Vermont. The results have been encouraging and the investigators have already selected a name for the prospective breed—the Southdale.

Since this new model of sheep is small to medium in size, the legs of lamb and other cuts are of the relatively small size so much desired by many city consumers. The fleeces of mature ewes average about 7 pounds of attractive, light-shrinking, moderately fine wool of medium grade.

One of the novelties in scientific breeding, which also has a practical aspect, is the development and multiplication of multi-nippled sheep—those with four or more nipples per ewe as compared with the normal number, two. A flock of 65 sheep having this character fairly well established was acquired in 1941. These animals were descendants of an original flock devel-

oped by Alexander Graham Bell, of telephone fame, who was interested in increasing the number of lambs per ewe and breeding into the flock the necessary number of nipples and sufficient milk flow for raising the extra lambs. The scientific studies now in progress deal with fixing, genetically, the multiple-birth and multi-nippled characteristics, with the view of increasing the production, per ewe, of both lamb meat and wool.

Still another field of study has been the improvement of Navajo sheep at the Department's Southwestern Range and Sheep Breeding Laboratory at Fort Wingate, N. Mex. Here the problems encountered are an outgrowth of the cultural habits and traditions of the people—now numbering about 50,000 Navajo Indians on a reservation of nearly 16 million acres. Their way of life is seminomadic and their economic welfare depends to a material degree on supplies of the proper type of wool for weaving into rugs and blankets.

The small yields of wool by old-type Navajo sheep—1 to 2 pounds per animal—led their owners to try cross-breeding with Rambouillet and other rams, but the resulting offspring proved to be poorly adapted to the adverse range conditions, and their wool was not of the type desired for handicraft weaving. In cooperation with the Bureau of Indian Affairs of the Department of the Interior, scientists of the Department of Agriculture now seek to synthesize a new strain of Navajo sheep that can live on the desert ranges and that produce, in addition to mutton and lamb, weaving wool suitable for the native handicrafts. Progress to date has been encouraging, with prospects that the remodeling of Navajo sheep will increase the economic security of their Indian owners and at the same time preserve the distinctive Navajo art of weaving.

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Air Transport of Perishable Foods

THE war-accelerated use of the airplane as a freight carrier points to a large-scale future movement of many civilian goods. Commodities most adaptable to air transport are those whose value will be increased by high speed transportation or special care in handling. Certain fruits and vegetables are in this class.

Air transportation of fruits and vegetables are important to producers and air lines because these commodities would be potential West-to-East and South-to-North cargo to balance the opposite flow of industrial products to the South and West from the Northeast.

A recent study [1] of the potential air cargo traffic of fresh fruit and vegetables at various assumed rates shows what kinds of fruits and vegetables would move by air freight in a volume of over 1 million ton-miles at various ton-mile rates. It is estimated that for fruits, at a 15-cent rate some strawberries will move, at a 10-cent rate strawberries and peaches will more, at 7 cents strawberries, grapes, peaches, cantaloupes, cherries, pineapples, plums, prunes, raspberries, and avocadoes will move in volume. For vegetables, at a 15-cent rate some tomatoes will move, at 10 cents tomatoes and beans will move, at 7 cents tomatoes, lettuce, asparagus, beans, cabbage, peas, spinach, corn, cucumbers, and endive will move in volume. At 5-cent and 3-cent rates the variety is further expanded.

In arriving at the potential air traffic of perishables principal emphasis was given to the quality pre-

[1] *Air Cargo Potential in Fresh Fruits and Vegetables* by Spencer A. Larson, Wayne University, Detroit, Mich., 1944.

miam which the air-borne fruits and vegetables were expected to command in the market. Little or no consideration was given to possible economies in distribution such as a decrease in spoilage, substitution of lighter containers, labor savings, elimination of ripening costs for tomatoes, and elimination of artificial refrigeration costs while in transit. To the extent that these economies decrease and offset the difference between air transportation and surface transportation costs the air freight potential is increased.

Hypothetical Operation

To illustrate how air freight of perishable foods might work out, a hypothetical operation was assumed,[2] predicated on the use of present known equipment as soon as it becomes available for commercial use. The air transportation of strawberries and tomatoes from Florida to Detroit was used as an example.

The analysis establishes under certain assumptions the air transport costs of strawberries and tomatoes from their respective production areas in the vicinity of Lakeland and Miami, Florida, to Detroit, Mich., shortly after the end of the war. The analysis includes the estimated charges for trucking from the production center to the airport, loading the airplane, the airplane flight from airport of origin to airport of destination, unloading the airplane, trucking the cargo to the produce terminal in the city of Detroit, and unloading the produce at this terminal. The type of airplane used in this analysis is the C–47 Transport, the military equivalent of the Douglas DC–3 widely used by the commercial airlines before the war.

The total transportation and handling charge arrived at was 11.3 cents per quart of strawberries from the Lakeland producing area to Detroit and 8 cents per pound of tomatoes from the Miami producing area to Detroit. Air transportation charges for strawberries are about 6.5 cents per quart higher than rail or truck shipments, and 6 cents per quart higher than rail express, while air charges for tomatoes are approximately 6 cents higher per pound than by other means.

In computing the transportation charges by the various methods of transportation, standard wooden containers were assumed in every instance. In all cases except air, wooden containers have been more or less a necessity in order to protect the product while in transit. Since ice refrigeration will not be necessary and since the air-borne cargo will receive very gentle handling compared to the handling of produce transported by surface carriers, paper containers might be used in place of the heavier wooden containers. This would have two effects: (1) a decrease in weight of the container would lower the cost of transportation per unit, and (2) the packaging of the product at the producing area into consumer-sized packages would tend to lower handling costs.

Lighter Containers

Paper containers have already been developed for both strawberries and tomatoes. The approximate weight of the large paper containers for strawberries is 7 pounds each compared with 10 pounds for the wooden container now in use. The approximate weight of the large paper containers for tomatoes is 2 pounds each compared with 5 pounds for the 30-pound lug box now in use. By using paper containers instead of wood the cost per quart of strawberries by air transportation is about 5½ cents higher than by rail or truck and 5 cents higher than by rail express, while the cost per pound of tomatoes is approximately 5 cents higher.

As now handled, most fresh tomatoes sold at retail during the winter

[2] "Post-War Possibilities of Air Transportation of Fresh Strawberries and Tomatoes," in *The Marketing and Transportation Situation*, March 1944, Bureau of Agricultural Economics, Washington, D. C.

months are picked in the field green. If the tomatoes are picked at the correct stage of maturity, they may be picked green and if handled properly will turn red and acquire a degree of palatability. However, under actual conditions green tomatoes are often not picked with the correct amount of maturity thereby causing many of the immature tomatoes to ripen very unsatisfactorily. After the tomatoes are picked green they are wrapped and shipped to ripening plants in the large northeastern consuming centers. In the ripening plants they are unwrapped, sorted, put into ripening rooms with controlled temperatures and after ripening, resorted and repacked for sale by retail stores.

Less Waste and Handling Costs

The advantages to be gained by packing the tomatoes directly into consumer packages in the producing area are a reduction in the cost of labor, and in the spoilage and waste which occur in the retail stores. These two factors would tend to further decrease the net difference in transportation costs between surface-transported and air-transported tomatoes.

Ripening costs vary from one market and one ripening room to another. Information obtained from the trade and from a study of tomato prices on the Chicago market indicates that the wholesale price of ripened tomatoes is about $3 per 100 pounds more than green tomatoes. If the tomatoes were transported by air practically all of this difference could be eliminated as the tomatoes could be picked vine-ripened, sorted, and packed directly into consumer-size paper cartons. Thus the net difference between surface-transported and air-transported tomatoes in paper cartons at the retail level may be decreased an additional 3 cents per pound.

After balancing the savings to be gained by air transportation of tomatoes against the additional cost of this method of transportation they are about equal. This study indicates that, using existing equipment and with approximately the present costs, air-transported tomatoes can be placed on retail counters at approximately the same price as those transported by surface carriers.

The principal advantage to be gained by air freight through faster and more gentle transportation is in the maintenance of the quality of the product. To bring strawberries from Florida to Detroit by rail express requires a minimum of 3 days and by rail freight and truck a minimum of 4 days. Tomatoes take slightly longer. By air the time required is between 6¾ and 7¾ hours. Produce may be harvested during the forenoon of one day, pre-cooled in the afternoon, loaded on the plane in the evening, transported overnight to the northern consuming center and placed in the retail store the day after harvesting. This makes it possible to harvest produce in a much more advanced stage of natural ripening with, in most cases, a considerable increase in palatability and vitamin content, and some increase in yield per acre.

Retail Price Not Much Higher

It remains to be established, by further study and the actual stocking of the produce in stores, whether the quality will be sufficiently improved to sell at a price high enough to pay for any difference in transportation costs. When the net difference between air-transported and surface-transported costs is added to the retail price of strawberries, the additional cost does not represent a substantially higher price to the housewife. If the cost of strawberries were not increased over 5 cents per quart and tomatoes not over 1 or 2 cents per pound and if the improvement in quality were as great as expected, it is quite probable that large quantities would be sold.

The period December through May in 1942–43 was fairly typical of the quantity of strawberries and tomatoes shipped by rail to Detroit in carload

lots. During this period a total of 7,988 tons of strawberries were shipped by rail—the equivalent of about 6,165,000 air ton-miles—with over half from Florida and Louisiana, both over 1,000 miles distant. Likewise, over 12 thousand tons of tomatoes were shipped to Detroit by rail—representing about 13,670,000 air ton-miles—with over 12 million air ton-miles originating in Florida, Texas, and California. While the more distantly produced berries and tomatoes would be the best candidates for air transportation, all of them represent potential traffic.

Present information indicates that a substantial portion of the strawberries now sold during the winter and spring months in Detroit and other Northern cities may move by air. It also indicates that almost all or even substantially more than the tomatoes now moving may be carried by air. If one-half of the strawberries and all of the tomatoes now moving over 1,000 miles to Detroit were moved by air, it would mean 2,537 DC–3 plane loads, or during the 6 months' period an average of 14 DC–3 plane loads per day.

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Bureau of Agricultural Economics

Pyrethrum and Rotenone for the Americas

EXTENSIVE and intensive cropping of the land which has concentrated the host plants of insect pests, widespread movement of crops and livestock in interstate and foreign commerce which has spread insect pests into larger areas, and increased demand for better quality products have all made the use of insecticides as important a farm operation throughout the United States as plowing and cultivating. This was not generally true before the turn of the century.

Widespread use of pyrethrum and rotenone as an insecticide in agriculture has developed only since about 1930 although pyrethrum has been used in the household for many years.

Pyrethrum and rotenone insecticides, while being toxic to insects and cold-blood animals, have no known harmful effects on warm-blooded animals. They are obtained from plants. Pyrethrum comes from the flower head—referred to commercially as pyrethrum flowers—of a cousin to the ordinary garden chrysanthemum, now grown in large quantities in Africa and Brazil and being introduced quite extensively elsewhere in Latin America. Rotenone comes chiefly from the roots of two plants, derris and lonchocarpus. Derris, a native of the far East, is now being planted in Central and South America, while lonchocarpus, the roots usually being referred to as cubé in the trade, is a native of the Amazon basin and other tropical areas in South America.

The United States imports all rotenone-bearing roots as well as virtually all pyrethrum flowers—a small quantity of the latter are produced in this country for experimental purposes. The accompanying table indicates the increased use of these insecticides during the 5 years previ-

United States Imports of Pyrethrum and Rotenone Materials, for Selected Periods [1]

	1935	5-yr. average 1935–39	1940
	1,000 pounds	*1,000 pounds*	*1,000 pounds*
Pyrethrum:			
Pyrethrum flowers	15,571	14,734	12,595
Rotenone:			
Derris root	200	943	3,221
Cubé	None	1,534	3,346
Total rotenone	200	2,477	6,572
Total pyrethrum and rotenone	15,771	17,211	19,156

[1] Compiled from reports of U. S. Department of Commerce.

ous to United States entry into the war.

War Speeded Production Shifts

The war accelerated the marked shifts in sources of pyrethrum and rotenone materials that had been underway before Japan's conquest of the Pacific and Far East. In 1935 over 97 percent of our imports of pyrethrum flowers came from Japan, less than 2 percent from Europe, and the remainder from Africa. By 1940 Japan was supplying only about 16 percent, Europe and South America less than 1 percent each, while African supplies had increased to about 83 percent.

In 1935 the entire United States supply of derris root came from British Malaya. By 1940 British Malayan supplies were about 57 percent, while the Netherlands East Indies supplied 31 percent and the Philippines, French Indo-China, and British East Africa the remaining 12 percent.

The United States imported no cubé in 1935, although it had been used by South American Indians for centuries as a fish poison. Our first imports, about a half million pounds, came from Brazil in 1936. By 1940, however, Peru was supplying about 83 percent, Brazil about 14 percent, and Venezuela the remaining 3 percent.

Following 1940, imports of pyrethrum flowers decreased slightly, while some stockpiling of rotenone-bearing roots occurred as the international situation became more tense. The whole situation was changed with Japan's attack in the Pacific. The source of about 16 percent of pyrethrum imports at once disappeared; practically all areas supplying derris root were menaced, and the demand placed on shipping for war purposes made the movement of all insecticidal materials most difficult. As the British and Dutch possessions in the Far East were overrun by the Japanese, the original sources of derris root were completely cut off. Cubé was wholly of Western Hemisphere origin and supplies from this source were available, but scarcity of ship bottoms materially slowed movement.

When the Far Eastern source of derris root was cut off, the only appreciable supply of available planting stock of this plant was at the Federal Experiment Station at Mayaguez, P. R. The Station immediately stepped up the production of cuttings which were distributed to producers on the recommendation of the Office of Foreign Agricultural Relations and to growers having contracts with the Foreign Economic Administration. By December 1943, there were approximately 2 million rooted derris plants in tropical America, all stemming from this source. This is sufficient to plant about 350 acres. A conservative estimate of yield is 1,000 pounds of air dried roots per acre, and from 18 to 24 months are required to produce a crop.

U. S. Plant Expert in Brazil

An insecticidal plant specialist of the Department of Agriculture has collaborated with the Brazilian authorities in the selection of high-yielding strains of lonchocarpus (from which cubé comes), the establishment of a reproduction nursery, and the expansion of commercial plantings. The same party made extensive explorations of the upper Amazon basin, selecting several hundred of the more promising lonchocarpus plants of the area for propagation in and distribution from a nursery established in Peru. In cooperation with the Government of Ecuador our Department of Agriculture has collected several thousand cuttings of lonchocarpus from eastern Ecuador and also in the Amazon basin, which are being propagated for testing, selection, and distribution at a Cooperative Agricultural Experiment Station near Quevedo, Ecuador.

By December 1943, the plantation acreage of lonchocarpus in Brazil and Peru was estimated at 7,750 acres, with

additional plantings being made, especially in Peru. A conservative estimate of yield for lonchocarpus is 2,000 pounds of air dried roots per acre and from 30 to 36 months are required from planting to produce a harvest. In addition to plantation production, large quantities of lonchocarpus roots are obtained from wild and semi-wild plants in Brazil, Peru, Colombia, Venezuela, and Ecuador.

The pyrethrum situation did not become acute immediately following Japanese hostilities, and, for a time, the belief was that needs for this insecticide could be met by the growing industry in Africa. But because of the nature of use of pyrethrum and the fortunes of war, it became evident in 1943 that an increase of production of this plant in the Americas would be desirable. Pyrethrum is a temperate zone plant, but because of the amount of hand labor required in its harvest, it is not well suited to domestic agriculture. A study was therefore made by a specialist of the Department of Agriculture of areas in Peru and Ecuador suitable for the introduction of the crop. Much of the cultivated land of these countries is sufficiently high above sea level to provide a temperate climate. Seeds were supplied for test plantings at cooperative experiment stations and by private growers under station supervision. The program is being intensified by a man highly trained in the production and preparation of pyrethrum flowers.

All Pyrethrum to Army

For the immediate future, the armed forces will require practically the entire supply of pyrethrum. There is insufficient knowledge of the future trend of events to formulate a long-time opinion regarding the production of pyrethrum flowers in the Americas. Climate and soil are suitable, but whether or not hostilities will continue until an industry becomes securely established in Latin America is problematical.

Stocks of Latin American rotenone-bearing roots in United States processors' hands were somewhat depleted at the beginning of 1944, but imports are expected to be from 30 to 40 percent greater than last year. It is believed that the supply of insecticides available to users will be at least as large and probably a little larger than the supply in 1943. This will come primarily from cubé, but small quantities of derris roots will be harvested this year.

For the long-time view, at the present rate and trend of planting, there will be an acreage of derris and lonchocarpus planted in 1946 sufficiently large to yield, when mature, about 22 million pounds of dry roots. Roots obtained from wild plants would be in addition. Post-war normal consumption has been variously estimated at from 20 to 40 million pounds annually if available. The rate of expansion of lonchocarpus plantings is decreasing slightly in Brazil and Peru where the growers have a fair idea of production costs and are thinking of future markets. Plantings of derris in Central America and Ecuador are so recent little is known about the costs of either growing or harvesting. Marked shifts in acreage and production may be expected when costs become better known even if prices remain at the present relatively high level. When prices are again subject to the influences of supply and demand, production in the Americas may be expected to fluctuate, but it is certain that the United States need never again be dependent on the Far East for its rotenone inseciticides.

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INSECTICIDE AND FUNGICIDE OUTLOOK

THE SUPPLY outlook for agricultural spray and dust materials in 1944 is in some respects improved over 1943. On the other hand, a few

important insecticides and fungicides in fairly good supply early in 1943 have now practically disappeared from domestic agricultural use because of extraordinary demand by the armed forces. In general, the insecticide situation is good. However, in certain instances controlled use of critical materials and appropriate utilization of substitutes should protect the important food crops from serious injury.

Calcium arsenate. Production goals for calcium arsenate are expected to be reached. Distribution should be adequate if early ordering of supplies is sufficiently general. Nearly 75 percent of calcium arsenate consumption is for cotton protection; most of the remainder is used on potatoes and tomatoes.

Copper fungicides. Copper oxide will be practically unobtainable in 1944 except where some has been held over from a year ago. Limited supplies have been provided, however, for tobacco blue mold control. Copper sulfate is plentiful although slow ordering by consumers has created a shortage of warehouse storage space.

Cryolite. Plentiful for extensive use, especially in dusts for vegetable crops and Victory gardens.

Formaldehyde. Supplies are adequate.

Lead arsenate. Production and distribution outlook is the same as calcium arsenate. About 70 percent of the consumption of lead arsenate goes into protection of fruit crops.

Mercury compounds. Supplies of mercury are no longer critical and have become plentiful for seed treatment and other agricultural uses.

Nicotine. Supplies of nicotine will probably be available to meet normal needs. Efforts are being made to replenish stocks which have been greatly lowered in recent months.

Spray oils. Supplies are adequate.

Paradichlorobenzene. Supplies are tight but sufficient for agricultural use.

Paris green. Supplies are uncertain because of the heavy requirements for control of malaria mosquito infestations.

Pyrethrum. Almost the entire supply of pyrethrum has been taken over by the armed forces for the control of malaria mosquitoes. The very limited amounts available for agricultural use are controlled as to end use under Food Production Order 11.

Rotenone. Supplies of rotenone-containing materials such as cubé are expected to be available to about the same extent as last year. In order to conserve the limited supplies the use of rotenone is controlled under Food Production Order 13.

Sulfur. Supplies of sulfur are plentiful, but problems of manpower, storage, and distribution may interfere with the prompt shipment of orders. Early ordering is desirable.

Tartar emetic. Supplies are adequate.

Thiocyanates. Ample supplies of these synthetic materials are expected to be available for wide use as extenders or substitutes for critical materials such as pyrethrum and rotenone.

Zinc compounds. Supplies are adequate.

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Horse and Mule Situation

THE PRESENT outlook is for a good market for horses and mules as long as a shortage of tractors and automobiles for nonmilitary use exists, cultivation of record crop acreages continues, and a heavy demand continues for horsemeat. When demobilization comes and factories convert from the making of tanks and guns to the manufacture of tractors, trucks,

and passenger automobiles, the inevitable continued mechanization of farms will further replace horses and mules on farms as well as in cities and towns. A reduced demand for horses and mules as a result of this mechanization will probably result in a continuation of the downward trend in horse and mule numbers in the post-war era.

Numbers Declining Since 1918

Although total horse and mule numbers in this country increased steadily since the time of the first annual records (1867) until 1918, numbers have been declining each year since that date. The 12,900,000 horses and mules on farms in this country at the beginning of 1944 were about half as many as the all-time record number of 26,700,000 at the beginning of 1918. The number of horses on farms began declining in 1915 and the mule numbers in 1925. With horse numbers decreasing more rapidly than mules, the number of horses on farms January 1, 1944, dropped to slightly over 9 million from the all-time high of 21 million in 1915.

Mule numbers on farms decreased from the peak number of about 6 million on January 1, 1925 to a little over 3½ million on January 1, 1944. Horses in cities, towns, and villages have also decreased. There were about 3,500,000 horses not on farms in 1910 while at the present time there are probably less than 200,000. Mules not on farms decreased in number from 378,000 in 1920 to 75,000 in 1930. The mule is better adapted than the horse to the cotton and tobacco areas of the South, and the South has been much slower to replace horses and mules with tractors than has the country as a whole.

The decline in horse and mule numbers coincides with the expansion and development of tractors, automobiles, motor trucks, and other mechanized machinery. An average of more than 100,000 farm tractors a year has been sold since 1918 in the United States. In the 5-year period (1936–40) this number was near 200,000 a year. The number of automobiles and trucks in operation on farms and in cities increased from 9 million in 1920 to 32 million in 1940.

The number of horse colts raised in 1943 was the smallest on record, equivalent to about one-third the number raised in 1920. Over 100,000 mule colts were on farms on the first of 1944, only 12,000 less than were raised in 1943, but the smallest crop since 1937. The number of mule colts raised has been stimulated by high prices for mules since 1935, so that the number of mule colts raised each year since 1937 has been over 100,000 a year, whereas this number averaged 67,000 a year from 1930–37.

The small number of colts raised in recent years plus the fact that imports are not expected to increase materially from current levels is leaving us with fewer horses and mules each year. Also, each year the average age of our horses and mules is increasing so that even if constant numbers were to be maintained, a larger proportion must be replaced each year. Thus it is not expected that numbers will be maintained. Annual disappearance of horses and mules has been much greater than the number of colts raised for many years. By 1950 there will be about 11 million horses and mules on farms at the present rate of disappearance.

Number of Horses and Mules on Farms, Colts Raised, and Disappearance, 1920–43

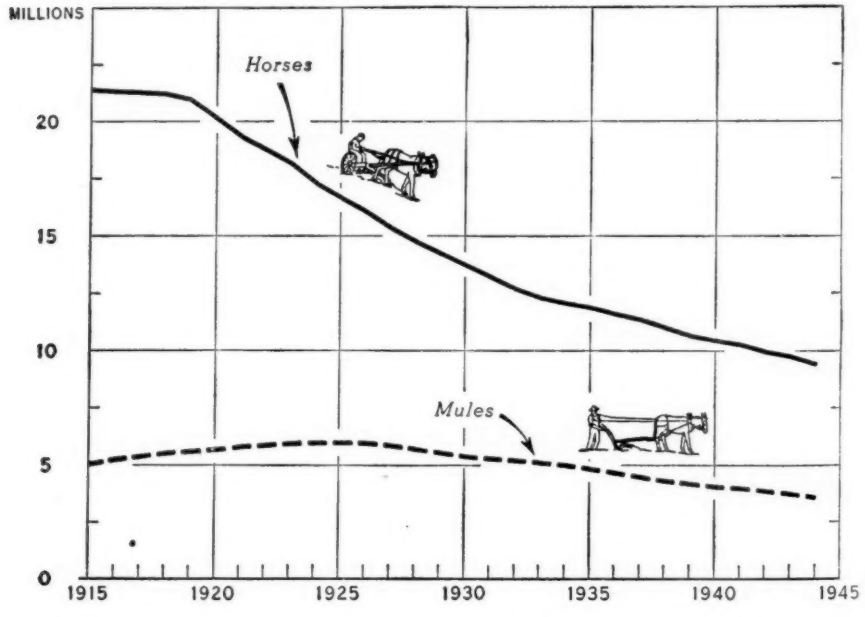
Year	Number on farms, Jan. 1	Colts raised during year	Total disappearance during year
	Thousands	*Thousands*	*Thousands*
1920	25,742	1,319	1,924
1925	22,569	750	1,833
1930	19,124	522	1,178
1935	16,683	728	1,185
1936	16,226	768	1,192
1937	15,802	806	1,363
1938	15,245	748	1,201
1939	14,792	752	1,063
1940	14,481	730	1,075
1941	14,136	635	1,051
1942	13,720	517	858
1943	13,379	478	968
1944	12,899	----------	----------

United States trade with foreign countries in horses and mules is not great. Except in World War I (1915–18), exports of horses and mules have never been large and have been largely confined to shipments of improved breeding stock to European countries together with the shipment of horses and mules for work in Mexico and Canada. Since 1916 imports of horses have usually been less than 10,000 head a year. In 1943 comparatively large numbers of horses were imported for slaughter as well as for other purposes. Canada is the largest source of horse imports into the United States, while Mexico ranks second. Imports of limited numbers of horses in pre-war years also came from the United Kingdom, Argentina, France, and Belgium. Imports and exports of horses and mules into this country will probably not be in sufficient volume to materially affect the horse and mule market in the United States after the war.

Slaughter of horses in federally inspected meat-packing plants accounted for almost one-fifth of the reduction in horse numbers during 1943. About 56,500 head were slaughtered in these plants compared with 28,800 head in 1942. The number slaughtered in 1943 was surpassed only in the years 1927 to 1932 when a large slaughter was brought about because of relatively low horse prices compared with cattle prices, relatively large numbers of surplus horses, and the expansion of industries manufacturing horsemeat products. The horse slaughter in 1943 was large because of heavy horsemeat demands for pet food, fur-bearing ainmal food, production of tankage and bonemeal products, and human consumption.

High prices for all classes of meat animals and a short supply of meat of all types have tended to increase the use of horsemeat. Horses slaughtered are usually wild horses, horses of advanced age, or otherwise unfit for work and have a low value. However, the demand for horsemeat has been such that many good horses have been killed, because of the relatively

HORSES AND MULES: NUMBER ON FARMS, JAN. 1, 1915-JAN. 1, 1944



U. S. DEPARTMENT OF AGRICULTURE NEG. 35351-A BUREAU OF AGRICULTURAL ECONOMICS

high prices slaughterers are paying at the present time. As long as meat is rationed and high in price, slaughterers will continue to kill large numbers of horses for meat.

The average price received by farmers for horses in 1943 was $90, considerably higher than in 1942, and except for the years 1936–37, was the highest yearly average price since 1920, when the widespread farm use of the tractor and auto began. The average price received by farmers for mules in 1943 was $116 per head compared with $100 in 1942. Present market quotations indicate that mule prices are now at record highs since 1937. Present horse prices are slightly lower than last year, but are higher than for any other year since 1939. Prices for both horses and mules are low relative to prices of other farm animals. Because of this, farmers are finding it more profitable at present prices to raise cattle, hogs, or sheep than horses or mules.

Prices Steady During War

As long as the war lasts horse and mule prices will probably be maintained at or near present levels. The outlook for horse prices after the war is less certain and will depend largely on the availability and price of farm tractors. With a large output of tractors at prices farmers can afford in post-war years, horse and mule prices will probably decline.

Current military purchases will add little, if any, to the demand for horses and mules. The number of horses required for military purposes in World War II is not as great as in World War I. In 1917 the Army owned upwards of 385,000 horses and 184,000 mules. Over two-fifths of these horses and mules were overseas. At that time horses and mules shipped outside the United States by the Army were not brought back to this country as they required special transport and could bring diseases into this country. After the last war Army horses and mules found a ready market in foreign countries. It is expected that few purchases of horses and mules will be made by the Army in 1944. Some sales of surplus Army horses are planned in the next few months.

Some have thought that after the war the Army "jeep" may be used for motive power on farms. This vehicle may have limited supplementary use on farms for hauling purposes, but as a source of drawbar power it has several serious limitations. It is not adapted to the cultivation of row crops as it has little clearance and its wheel spread is not adjustable to take care of variations in the width of rows. The high speed motor and high gear ratio of the "jeep" makes it use more fuel and will cause it to wear out sooner than the small type farm tractor pulling heavy loads at low speeds.

How extensive will be the mechanization of farms after the present war? This is still unpredictable, but the trend is evident. There will be a more widespread use of all types of mechanical power on farms. Low horsepower units will be developed to take the place of horses on the cultivator and other light draft jobs. The decrease in motive power on farms brought about by a reduction in horse and mule numbers will be replaced largely by tractors. Colts raised this year will not be able to work until at least 1948. Once farmers have purchased tractors, equipped them with farm tools that are made for tractors, they will be reluctant to again use horses and miles. Numbers of horses and mules will decrease even more and so the horse and mule will not occupy such a high place in our farm economy as they do today.

GROVER J. SIMS
Bureau of Agricultural Economics

Insurance: Emergency Farm Labor Program. Processed. 9 pp. Bureau of Agricultural Economics. Washington. April 1944.

Describes insurance protection applicable to various farm labor programs.

Year and month	Industrial production (1935–39 = 100)[1]	Income of industrial workers (1935–39 = 100)[2]	1910–14 = 100				Index of prices received by farmers (August 1909–July 1914 = 100)			
			Wholesale prices of all commodities[3]	Prices paid by farmers		Farm wage rates	Livestock and products			
				Commodities	Commodities, interest, and taxes		Dairy products	Poultry and eggs	Meat animals	All livestock
1934	75	76	109	122	129	95	101	89	70	84
1935	87	86	117	125	130	103	114	116	116	115
1936	103	100	118	124	128	111	125	114	118	120
1937	113	117	126	131	134	126	130	110	132	127
1938	89	91	115	123	127	125	114	108	115	113
1939	109	105	113	121	125	123	110	95	112	108
1940	125	119	115	122	126	126	119	96	111	112
1941	162	169	127	131	133	154	139	121	146	140
1942	199	238	144	152	151	201	162	151	188	173
1943	239	305	151	167	164	264	193	190	209	200
1943—April	237	300	151	165	162	239	190	174	220	202
May	238	302	152	167	163	-------	189	175	216	200
June	236	304	152	168	164	-------	187	179	213	199
July	240	306	151	169	165	274	189	183	209	198
August	242	312	151	169	165	-------	192	192	208	200
September	245	315	151	169	165	-------	195	201	208	203
October	247	317	150	170	166	280	198	212	204	204
November	247	318	150	171	167	-------	202	219	193	201
December	241	316	151	173	169	-------	203	212	194	200
1944—January	[4] 243	[4] 319	151	174	169	275	201	177	194	193
February	[4] 244	321	151	175	170	-------	201	168	199	194
March	242	----------	152	[4] 175	[4] 170	-------	199	162	203	194
April	----------	----------	----------	175	170	292	196	151	203	191

Year and month	Index of prices received by farmers (August 1909–July 1914 = 100)								All crops and livestock	Parity ratio[5]
	Crops									
	Food grains	Feed grains and hay	Tobacco	Cotton	Oil bearing crops	Fruit	Truck crops	All crops		
1934	91	95	159	97	95	88	95	98	90	70
1935	97	107	174	94	120	82	119	102	109	84
1936	108	102	165	95	112	92	104	107	114	89
1937	120	125	204	90	120	104	110	115	122	91
1938	75	71	176	67	88	70	88	80	97	76
1939	72	69	155	70	90	68	91	80	95	76
1940	84	82	136	77	96	73	111	88	100	79
1941	97	89	159	107	130	85	129	106	124	93
1942	120	111	252	149	172	114	163	142	159	105
1943	148	147	325	160	190	179	245	183	192	118
1943—April	143	141	316	162	185	162	364	192	197	122
May	144	144	319	162	187	170	276	187	194	119
June	145	148	320	161	187	196	261	190	195	119
July	148	151	321	158	183	216	220	188	193	117
August	147	152	326	160	196	202	186	183	192	116
September	150	156	315	163	199	205	180	182	193	117
October	157	158	335	164	201	195	187	183	194	117
November	160	158	347	156	202	196	228	187	194	116
December	166	165	349	160	202	208	223	192	196	116
1944—January	170	168	350	162	203	204	267	199	196	116
February	170	169	348	161	205	206	247	196	195	115
March	169	171	351	161	207	215	242	198	196	115
April	171	172	352	163	207	237	220	200	196	115

[1] Federal Reserve Board, adjusted for seasonal variation, revised November 1943.
[2] Total Income, adjusted for seasonal variation, revised March 1943.
[3] Bureau of Labor Statistics. [4] Revised.
[5] Ratio of prices received to prices paid, interest and taxes.

NOTE.—The index numbers of industrial production and of industrial workers' income shown above are not comparable in several respects. The production index includes only mining and manufacturing; the income index also includes transportation. The production index is intended to measure volume, whereas the income index is affected by wage rates as well as by time worked. There is usually a time lag between changes in volume of production and workers' income since output can be increased or decreased to some extent without much change in the number of workers.

U. S. GOVERNMENT PRINTING OFFICE: 1944